GUIDELINES FOR THE ESTABLISHMENT OF SECTOR SPECIFIC STANDARDIZED BASELINES

Standardized Baseline Workshop
Kathmandu, Nepal, 4 September 2011
OVERVIEW

• Definitions

• Applicability

• Four types of measures

• Level of aggregation
Guidelines for the establishment of sector specific standardized baselines

DEFINITIONS

• Output
  • Goods or services
  • Comparable quality, properties, and application areas
  • e.g. clinker, lighting, residential cooking

• Sector
  • A segment of a national economy
  • Delivers defined output
  • Characterized by output

• Positive list
  • List of emission reduction activities
  • Automatically additional
  • Location, technology/measure, size
Guidelines for the establishment of sector specific standardized baselines

DEFINITIONS

Measure
- Broad class of GHG emission reduction activities
- Possessing common features
- Four types currently covered:
  - Fuel and feedstock switch
  - Switch of technology with or without change of energy sources (including energy efficiency improvement)
  - Methane destruction
  - Methane formation avoidance
Guidelines for the establishment of sector specific standardized baselines

APPLICABILITY

• Sectors

• Stationary sources, but not A/R

• Most types of project activities

• Standardized baselines
  • For a country or a group of countries
  • Demonstrate additionality: positive lists
  • Identify baseline scenario
  • Determination of baseline emissions
Steps for establishing standardized baselines

- Identify host country, output, sector and measure
- Establish additionality criteria (e.g. positive lists)
- Identify the baseline
- Determine the baseline emission factor
Guidelines for the establishment of sector specific standardized baselines

MEASURE 1: FUEL/FEEDSTOCK SWITCH

- Define sector (product Oi) and technology Tj
- Identify fuels/feedstocks for Tj
- Identify corresponding percentages of output
- Rank the carbon intensity of the fuels/feedstocks

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Output Oi</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coal</td>
<td>Heavy Fuel</td>
</tr>
<tr>
<td>0%</td>
<td>25%</td>
</tr>
</tbody>
</table>
Guidelines for the establishment of sector specific standardized baselines

**FUEL/FEEDSTOCK SWITCH - additionality**

- Identify the fuels/feedstock with higher CEFs and contributing to production of Xa% of the output Oi of the sector based on technology Tj.

- The positive list for additionality demonstration:
  - Cleaner than the fuels making up Xa%
  - NG and RB are eligible
  - Check their commercial attractiveness and barriers

![Diagram showing Fuel/Feedstock Switch with Xa = 80%]

Coal  Heavy Fuel  Fuel Oil  Diesel  NG  RB
0%  25%  50%  75%  100%
Guidelines for the establishment of sector specific standardized baselines

**FUEL/FEEDSTOCK SWITCH – baseline fuel**

- Identify the fuels /feedstock with higher CEFs and contributing to production of Xb% of the output Oi of the sector based on technology Tj.
- Baseline fuel:
  - Cleanest among the fuels making up Xb%
  - Fuel oil
- Baseline emission factor
  - IPCC fuel oil emission factor (t CO2 / t fuel oil) x Design specific fuel oil consumption (t fuel oil / t Oi)

![Diagram showing fuel types and their percentages]

Xb = 60%
FUEL SWITCH – a case study from Egypt

- Brick producing sector
- Heavy fuel oil, 75.5 tCO2/TJ, 82% brick factories
- Natural gas, 54.3 tCO2/TJ, 18% brick factories
- Assume that all brick factories are of similar production capacities

Technology Tj: Brick kiln

Output Oi: brick
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FUEL SWITCH – a case study from Egypt

- Eligible for the positive list of fuel switch at brick kilns in Egypt: natural gas
- Baseline fuel: heavy fuel oil

\[
X_a = 80\% \\
X_b = 60\%
\]
Guidelines for the establishment of sector specific standardized baselines

**MEASURE 2: TECHNOLOGY SWITCH**

- Define sector (product Oi)
- Identify technology with or without energy source
- Identify corresponding percentage of output
- Rank the carbon intensity of the technologies

**Output Oi: Electricity**

Energy source b

TECHNOLOGY T_b

Energy source p

TECHNOLOGY T_p

- Sub Coal
- Diesel Engine
- OCGT
- CCGT
- RB
- Wind

<table>
<thead>
<tr>
<th>Percentage</th>
<th>Sub Coal</th>
<th>Diesel Engine</th>
<th>OCGT</th>
<th>CCGT</th>
<th>RB</th>
<th>Wind</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
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<td>25%</td>
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<td>75%</td>
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<td>100%</td>
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</table>
Guidelines for the establishment of sector specific standardized baselines

TECHNOLOGY SWITCH - Additionality

Ya = 80%

- Identify the technologies with higher CEFs and contributing to production of Ya% of the output Oi of the sector.

- The positive list for additionality demonstration:
  - Cleaner than the technologies making up Ya%
  - Wind and RB are eligible
  - Check their commercial attractiveness and barriers
Guidelines for the establishment of sector specific standardized baselines

TECHNOLOGY SWITCH – baseline technology

- Identify the technologies with higher CEFs and contributing to production of Yb% of the output Oi of the sector
- Baseline technology:
  - Cleanest among the technologies making up Yb%
  - OCGT
- Baseline emission factor
  - IPCC natural gas emission factor (t CO2 / t natural gas) x Design specific natural gas consumption (t natural gas / t Oi)

Yb = 60%

Sub Coal Diesel Engine OCGT CCGT RB Wind

0% 25% 50% 75% 100%
TECHNOLOGY SWITCH – a case study from Mongolia

- Power sector
- Coal fired heat and power cogeneration, 98% electricity
- Diesel generator, 1.5% electricity
- Renewable (mostly hydro), 0.5% electricity
Guidelines for the establishment of sector specific standardized baselines

TECHNOLOGY SWITCH – a case study from Mongolia

- Eligible for the positive list of technology for power generation in Mongolia: diesel generator and hydro
- Baseline technology: coal fired heat and power cogeneration

Coal-fired heat and power cogeneration

\[ Y_b = 60\% \quad X_a = 80\% \]
MEASURE 3: METHANE DESTRUCTION

• Additionality
  • If the level of CH4 destruction undertaken by a measure is higher than what is mandatory and enforced, the measure of destruction is additional.

• Baseline
  • The baseline level of destruction is the mandatory and enforced level of destruction.

• 0% for all the 8 countries which participated in the survey for this measure
MEASURE 4: METHANE FORMATION AVOIDANCE

• Additionality
  • If the proposed disposal and treatment method is not mandatory and enforced and is less attractive, then the measure is additional.
  • Examples: landfill aeration, composting, use of agriculture residues
    • All face technology barrier in the 8 countries which participated in the survey for this measure.

• Baseline
  • The baseline is the most commonly used disposal and treatment method.
  • Examples: agricultural residues are burned in the field; municipal waste is landfilled.
LEVEL OF AGGREGATION

• Generally one sector in one country

• Further aggregation
  • From homogeneity
  • Geographically, may be expanded to a group of countries

• Disaggregation
  • From heterogeneity
  • Geographically, may be restricted to a region within a country (e.g. regional grid)
  • Availability of certain fuels/feedstocks